SPEKTRA EUROPE

# USER MANUAL FOR GSM QUAD-BAND AUDIO TRANSMITTER PIXEL FULL FW V2.3 OR GREATER

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- PREFACE:

This technical manual introduces the users at the correct use of audio GSM transmitter PIXEL FULL V.2.3

First of all, check this simple four steps before insert the SIM in to PIXEL FULL.
Using a standard mobile phone:

- Disable the PIN request on the SIM that you want use.
  **(Upon request, the unit can be programmed in advance with pin code)**
- Remove the conference call, call transfer and any other answering service.
- On prepaid SIM check the credit on it.
- On multi numbering SIM (voice, data and fax), use always the voice number as target for sending the SMS.

Send the SMS command following the instructions below, **all the command MUST be sent with uppercase characters**.
Wait about 20 seconds between one SMS and each other giving the network the right time to deliver the message and the time to the PIXEL unit to decode, respond and delete.
At the same time PIXEL will do a series of led-flashes to indicate that the message has been received, interpreted and cancelled.

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- NUMBER SETUP VOICE/SMS:

THIS COMMAND SET THE PHONE NUMBERS CORRELATED WITH THE SPECIFIC FUNCTION.
(SET THE NUMBER WITH THE INTERNATIONAL PREFIX; EX: +39..., +33..., +44...).

##NExxx* SET THE **INCOMING NUMBER**, IF SET THE UNIT WILL ACCEPT ONLY CALL FROM THE PROGRAMMED NUMBER

##NVxxx* SET THE **VOICE OUTGOING NUMBER** THE UNIT WILL CALL THIS NUMBER IF A PHYSICAL MOTION IS MEASURED OR, IF ENABLED, IF THE VOX LEVEL IS REACHED

##NMxxx* SET THE **START** VEHICLE NUMBER FOR THE SMS ALARM

##NSxxx* SET THE **STOP** VEHICLE NUMBER FOR THE SMS ALARM

##NCxxx* SET THE **CELL-ID TRACKING** NUMBER FOR THE OUTGOING SMS

Ex: xxx = PHONE NUMBER = +441231234567*
##NV+441231234567* SET THE VOICE NUMBER

WARNING: TO DISABLE A SPECIFIC FUNCTION, YOU WILL SEND 5 ZEROS AS NUMBER TO THE SPECIFIC NUMBER COMMAND YOU WANT DISABLE
EX: ##NV00000* FOR DISABLE THE VOICE NUMBER.

IMPORTANT NOTE: REMEMBER **ALWAYS** TO SEND AN ASTERISK ( ***** ) AT THE END OF THE NUMBER.

- GENERAL FUNCTIONS:

##FORMAT CLEAR AND DELETE ALL THE USER PROGRAMMED FUNCTION AND SET THE UNIT IN TO THE FACTORY RESET STATE, THE UNIT WILL ALSO DO AN HARDWARE AND SOFTWARE RESET.

##RESET THE UNIT WILL DO AN HARDWARE AND SOFTWARE RESET WITHOUT LOOSING THE USER PROGRAMMED FUNCTION.

##BONx THE UNIT WILL GO IN TO THE SLEEP MODE FOR THE TIME LISTED IN THE FOLLOWING TABLE:
x = 1 -> 15 MINUTES
x = 2 -> 30 MINUTES
x = 3 -> 60 MINUTES
x = 4 -> 90 MINUTES
x = 5 -> 2 HOURS
x = 6 -> 4 HOURS
x = 7 -> 8 HOURS
x = 8 -> 16 HOURS
x = 9 -> 20 HOURS

WHEN THE MESSAGE IS DECODED, THE UNIT WILL SHUTDOWN IMMDIATELY. IF IT IS DISCONNECTED FROM THE POWER, THE NEXT TIME IT WILL RECONNECTED IT SEEMS IT DOESN'T WORK OR IT IS BURNED. ALSO THE LED WILL NOT WORK. SO DON'T CONFUSE A SLEEPING UNIT WITH A BURNED OR DON'T WORKING UNIT. WAIT THAT THE SLEEPING TIME WILL END LEAVING THE UNIT CONNECTED TO THE POWER.

##TRxx TIMEOUT ON RECALL, IF THE CALL END ABNORMALLY, THE UNIT WILL WAIT THIS TIME **BEFORE** TRY AGAIN TO RECALL THE TARGET NUMBER
xx = 00->99 MINUTES
xx = 01 (DEFAULT)

##LED0 THE LED IS ALWAYS OFF
##LED1 THE LED IS IN NORMAL WORKING CONDITION WITH VARIOUS DIAGNOSTIC LAPMS (DEFAULT)

##RAN DISABLE ALL THE RECALL FUNCTIONALITY WITHOUT DISABLE THE PROGRAMMED NUMBERS

- VOICE COMMANDS:

| | |
|---|---|
| ##TVxx | VOICE TIMEOUT AFTER ACTIVATION EVENT IS ENDED (MOVMENT AND/OR AUDIO NOISE)<br>xx = 01->98 MINUTES<br>xx = 05 (DEFAULT) |
| ##VOLx | MICROPHONE SENSIVITY<br>X = 0 -> 6<br>x = 0 MINIMUM GAIN AT -12db<br>x = 1 GAIN AT -8dB<br>x = 2 GAIN AT -4dB<br>x = 3 GAIN AT 0dB (DEFAULT)<br>x = 4 GAIN AT +4dB<br>x = 5 GAIN AT +8dB<br>x = 6 MAXIMUM GAIN AT +12dB |
| ##MOVx | ENABLE THE SHOCK SENSOR AND SET THE MOTION SENSIVITY<br>x = 0->9<br>x = 0 FUNCTION DISABLE (DEFAULT)<br>x = 1 LOW SENSIVITY, A LONG AND DURABLE MOVMENT IS NECESSARY TO TRIGGER THE UNIT.<br>x = 9 HIGH SENSIVITY, A LITTLE MOVMENT IS ENOUGH TO TRIGGER THE UNIT.<br>**IT'S POSSIBLE TO BE USED TOGETHER WITH THE VOXx FUNCTION** |
| ##VOXx | ENABLE THE VOX SENSOR AND SET THE VOX LEVEL.<br>x = 0->9<br>x = 0 FUNCTION DISABLE (DEFAULT)<br>x = 1 LOW SENSIVITY VOX, AN HIGH AND DURABLE NOISE IS NECESSARY TO TRIGGER THE UNIT<br>x = 9 HIGH SENSIVITY VOX, IS ENOUGHT A LITTLE NOISE TO TIGGER THE UNIT<br>**IT'S POSSIBLE TO BE USED TOGETHER WITH THE MOVx FUNCTION** |

##MIKx MICROPHONE SELECTION
x = 0->4
x = 0 ENABLE MIC1 + MIC2 AT THE SAME TIME (DEFAULT)
x = 1 ENABLE MIC1
x = 2 ENABLE MIC2
x = 3 DYNAMIC1: ENABLE MIC1 IF THE CAR IS STOPPED, AND AUTOMATICALLY ENABLE MIC2 IF IT'S MOVING.
x = 4 DYNAMIC2: ENABLE MIC2 IF THE CAR IS STOPPED, AND AUTOMATICALLY ENABLE MIC1 IF IT'S MOVING.

##DSPx ENABLE DSP PARAMETER (NOISE REDUCTION OPTION)
x = 0->3
x = 0 FUNCTION DISABLED (DEFAULT)
x = 1 ENABLE THE SELF-ADAPTIVE NOISE REDUCTION MODE
x = 2 ENABLE, THE NOISE WILL BE REDUCED OF -6dB
x = 3 ENABLE, THE NOISE WILL BE REDUCED OF -12dB

##ECHOx ENABLE ECHO REDUCTION PARAMETER,
x = 0->7
x = 0 FUNCTION DISABLED (DEFAULT)
x = 1 FUNCTION ENABLE WITH SOFT REDUCTION ECHO
x = 7 FUNCTION ENABLE WITH HARD REDUCTION ECHO

##RV IMMEDIATELY START ONE VOICE RECALL ON THE PRE PROGRAMMED VOICE NUMBER.

##RAV ENABLE THE VOICE RECALL ON MOTION/VOX EVENT
THIS FUNCTION MUST BE ENABLED FOR USE THE MOV/VOX TRIGGER OPTION

- TRACKING CELL-ID SMS COMMANDS:

THIS FUNCTION WILL ENBLE THE CONTINUOS SEND OF CELL-ID SMS WITH SPECIFIC DELAY.
SPEKTRA EUROPE PROVIDE A SPECIFIC LOCALIZATION SOFTWARE WITH AN EXTENSION THAT READ THIS INFORMATION AND, USING A PUBBLIC CELL-ID DATABASE, LOCALIZE THE PIXEL UNIT.
TO DO SO IS NECESSARY PROVIDE AN INTERNET CONNECTION AND A GSM MODEM CONNECTED TO THE PERSONAL COMPUTER THAT RUN THE APPLICATION.
ALL THE CELL-ID DATA AND THE LOCALIZATION INFORMATION WILL BE STORED IN A SPECIFIC SQL DATABASE AND MAY BE REVIEWED LATER TO ANALIZE THE ROUTE DONE FROM THE UNIT.
PLEASE ASK US FOR THE FULL IMPLEMENTATION OF THI EXTENSION AND FOR THE SOFTWARE PREREQUISITIES.

TO ENABLE THIS FUNCTIONALITY YOU WILL USE THE FOLLWING COMMANDS:

| | |
|---|---|
| ##NCxxx* | SET THE **CELL-ID** TRACKING NUMBER FOT THE OUTGOING SMS<br>THIS NUMBER CORRESPONDS AT THE SIM INSIDE IN THE MODEM CONNECTED TO THE PC.<br>NO THE PC WILL BE ALREADY INSTALLED OUR SOFTWARE FOR TRACKING THE UNIT. |
| ##TCXX | THE UNIT SENDS THE CONTINUOUS LOCALIZATION CELL-ID SMS MESSAGES (IF CONFIGURED) WITH A DELAY OF MINUTES INDICATED IN THIS SETTING:<br>XX = 00 FUNCTIONS DISABLE (DEFAULT)<br>XX = 01->99 MINUTES |
| ##D5 | REQUEST OF CELL-ID FROM ALL THE AVAIABLE NETWORK COMPANY.<br>**WARNING**: THIS COMMAND MAY TAKE UP TO 5 MINUTES TO EXECUTED, DURING THIS TIME THE PIXEL WILL BE NOT REGISTRERED AND WILL BE BUSY.<br>(AT LEAST 9 CELL-ID WILL BE LOGGED). |

- REMOTE DEBUG MESSAGES:

WITH THIS COMMANDS YOU CAN GET THE STATUS OF THE UNIT THROUGH SMS MESSAGES.
THE DEBUG MESSAGES ARE SENT BACK TO THE PHONE NUMBER THAT ASK FOR THEM WITH THE SPECIFIC SMS COMMAND.
(ARE SHOWN THE DEFAULT VALUES)

##D1 REQUEST THE STATUS OF THE INFORMATION DESCRIBED AT THE PAG. 4 OF THIS MANUAL:
- KIND OF UNIT, NAME, VERSION FW, - D1
- NMov:NON PROG.
- NStop:NON PROG
- NVoce:NON PROG
- NEntr:NON PROG
- NCell:NON PROG

##D2 REQUEST THE STATUS OF THE INFORMATION DESCRIBED AT THE PAG. 6 OF THIS MANUAL:
- KIND OF UNIT, NAME, VERSION FW, - D2
- MOV:0
- VOX:0
- RAN
- TV:05
- TR:01
- TAV:00

##D3 REQUEST THE STATUS OF THE INFORMATION DESCRIBED AT THE PAG. 5,6,7 OF THIS MANUAL
- KIND OF UNIT, NAME, VERSION FW, - D3
- LED:1
- VOL:3
- DSP:0
- ECHO:0
- MIK:0
- TC:00
- CONN_V:0
- SIGN: xx
- BATTERY: 3.5V
- PKG51-D (ver fw. GSM)
- IMEI: 01234567890123

##D4 REQUEST THE STATUS OF THE MAIN CELL-ID:
- KIND OF UNIT, NAME, VERSION FW, - D4
- MAIN CELL:
- MCC:xxx
- MNC:x
- LAC:xxxxx
- CID:xxxxx
- SIGN:xx
- BER:xx

| | |
|---|---|
| ##D5 | REQUEST OF CELL-ID FROM ALL REGISTRERED NETWORK COMPANY<br>WARNING: THIS COMMAND MAY TAKE UP TO 5 MINUTES TO EXECUTED, DURING THIS TIME THE PIXEL WILL BE NOT REGISTRERED AND WILL BE BUSY.<br>(AT LEAST 9 CELL-ID WILL BE LOGGED). |
| ##DA | REQUEST ALL THE PREVOIUS STATUS MODE LISTED AT THE SAME TIME (EXCEPT THE ##D5 COMMAND) |

- GENERAL NOTE:

USE THE ##D1 COMMAND FOR KNOW THE TYPE OF PIXEL UNIT (PIXEL-FULL, PIXEL-LIGHT)

THESE ARE TWO TYPICALLY OPERATIVE MODE OF PIXEL:
"A-PIXEL FULL-V2.3 – D1" PIXEL FULL- 2 MICROPHONE, FIRMWARE VER. 2.3
"A-PIXEL LIGHT-V2.3 – D1" PIXEL LIGHT- 1 MICROPHONE, FIRMWARE VER. 2.3

WITH THE REMOTE COMMAND "##D3", YOU CAN SEE THE "CONN_V=x" VALUE:
- "CONN_V=0" MEANS THAT **THERE IS NO** A VOICE CALL IN PROGRESS.
- "CONN_V=1" MEANS THAT **THERE IS** A VOICE CALL IN PROGRESS.

WITH THE REMOTE COMMAND "##D3" YOU CAN SEE:
THE "SIGN: xx" VALUE WHERE xx = GSM SIGNAL LEVEL.
xx = 05 NOT GOOD SIGNAL (MIN VALUE).
xx = 30 VERY GOOD SIGNAL (MAX VALUE).

ATTENTION:
FOR THE USE OF PIXEL UNIT IN CAR ARE RECOMMENDED THE FOLLOWING SETTING COMMANDS:
##ECHO=1 - ##VOL2 - ##DSP1
ATTENTION:
FOR THE USE OF PIXEL UNIT IN HOUSE OR OFFICE ARE RECOMMENDED THE FOLLOWING SETTING COMMANDS:
##ECHO=1 - ##VOL6 - ##DSP0 (OR OPT. 1)

WITH THE "##D5" DEBUG MESSAGE YOU CAN SEE ALL THE OTHER SECONDARY CELL THAT THE PIXEL IS LISTENING OF ALL THE OPERATOR AVAILABLE

NOTE:
The Spektra Europe S.r.l. thanks you again for your confidence over the years and ensures a constant commitment to the development and optimization of the product. Therefore, please check back periodically for updates and documentation releases new FW and SW in a perspective of continuous growth that has always distinguished. Our staff is always available for any questions about product features and for any and / or requests for implementations. Any omissions, errors and / or changes are therefore not attributable to carelessness in the preparation of this document, but must be considered in view of the above-mentioned development.

- TECHINICAL SPECIFICATIONS:

## GSM SECTION:

| | |
|---|---|
| GSM BAND: | Quad – Band GSM 850/900/1800/1900 MHz |
| RF POWER: | 2W Class 4 (850&900 MHz) – 1W Class 1 (1800&1900 MHz)<br>Sensibility GSM/GPRS <-106 dBm. |
| SIM: | slide SIM card reader. |
| SMS: | Text |

## AUDIO SECTION:

| | |
|---|---|
| VOX FUNCTION: | Switchable VOX with several levels. |
| DSP OPTION: | Different noise reduction levels, adaptive or fixed value reduction. |
| MICROPHONE SELECTION: | Two independently selectable microphones, at the same time (pseudo-stereo) or with dynamic-mic option |

## SECTION TRANSMITTER:

| | |
|---|---|
| POWER SUPPLY.: | Two different solutions:<br>7-26 Vdc external stabilized trough an high efficiently switching power regulator<br>3,6 Vdc direct (for hi-lion battery direct connection) |
| CONSUMPTION: | (in sleep and at maximum audio level transmission)<br>3,6 Vdc = 13mA sleep, 140mA max<br><br>12 Vdc = 35mA sleep, 75mA max |
| MICROPHONES: | Two selectable microphones both or independently. |
| GSM ANTENNA: | flexible / patch. |
| CONNECTIONS: | Power supply with red (+) and black cable (-).<br>Microphones cables with anti tear steel core and double shielding. |
| OPERATING STATES: | Operating status led. |
| SENSORS / PARAMETERS: | Variable shock sensor sensivity and vox threshold level. |
| WEIGHT: | 20 gr. approximately. |
| DIMENSIONS: | 31 x 31 x 6 mm. |